

Signal Line Series

❖ Features

- Various size (1005~4532)
- High impedance characteristics
- Good reliability (Monolithic structure)
- Magnetically shielded
- Fast mounting speed
- RoHS compliant

❖ Applications

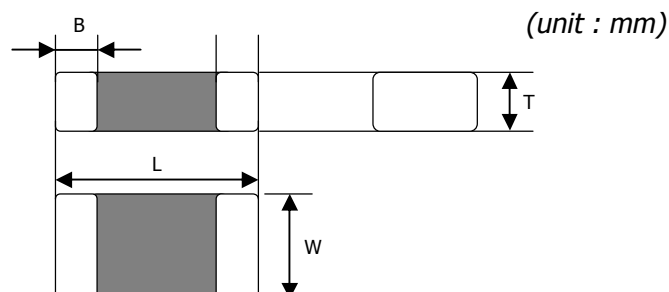
- PDP/LCD Monitor, Digital TV/VCR etc.

❖ General Code



- Series Code**
CB : Chip Ferrite Beads
- Dimension Code**
The first two digits : length(mm)
The last two digits : width(mm)
- Application Code**
G : Signal Line
P : High Current Line
U : Ultra High Current Line
- Material Code**
A: General Frequency
K,J: Medium Frequency
M: High Frequency
V: Very High Frequency
- Impedance Value Code**
The first two digits represents significant
The last digit is the number of zeros following
ex) 150 = 15 (Ω)
- Packaging Code**
T : Reel paper packaging
E : Reel embossed tape packaging

❖ Dimensions

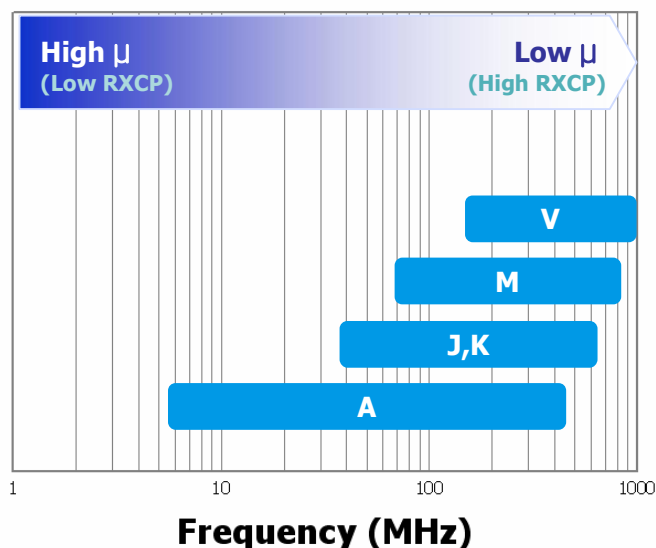


Size	L	W	T	B
1005	1.0±0.10	0.5±0.10	0.5±0.10	0.25±0.1
1608	1.6±0.15	0.8±0.15	0.8±0.15	0.3±0.2
2012	2.0±0.20	1.25±0.2	0.85±0.2	0.5±0.3
3216	3.2±0.20	1.6±0.20	1.1±0.20	0.5±0.3
4516	4.5±0.25	1.6±0.20	1.3±0.20	0.5±0.3
4532	4.5±0.25	3.2±0.25	1.5±0.25	0.5±0.3

❖ Temperature Range

- Operating Temp. -55 ~ +125℃
- Storage Temp. -10 ~ +40 ℃

❖ Typical Material Characteristics



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❖ 1005 SIZE

Samwha P/N	Impedance (Ω) $\pm 25\%$	DC Resistance (Ω) max.	Rated Current (mA) max.	Test Frequency (MHz)
CB1005GA100	10	0.05	1000	100
CB1005GA300	30	0.10	900	
CB1005GA600	60	0.20	500	
CB1005GA121	120	0.25	500	
CB1005GA221	220	0.35	300	
CB1005GA301	300	0.45	300	
CB1005GA601	600	0.60	300	
CB1005GA102	1000	1.00	200	
CB1005GK300	30	0.10	900	
CB1005GK600	60	0.20	500	
CB1005GK800	80	0.20	500	
CB1005GK121	120	0.30	500	
CB1005GK221	220	0.35	500	
CB1005GK301	300	0.45	400	
CB1005GK471	470	0.55	300	
CB1005GK601	600	0.60	300	
CB1005GK102	1000	0.95	250	

※ Measuring Equipment

- . Z : HP4291B / E4991A

- . Rdc : HP4338B

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❖ 1005 SIZE

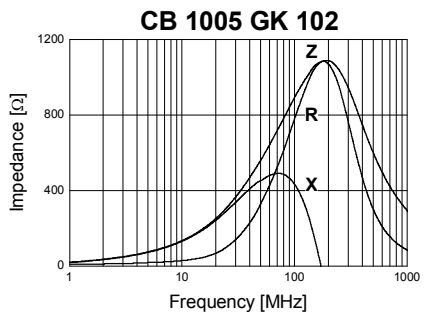
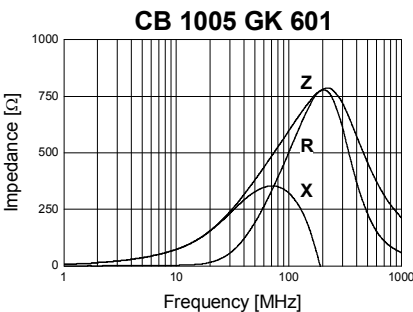
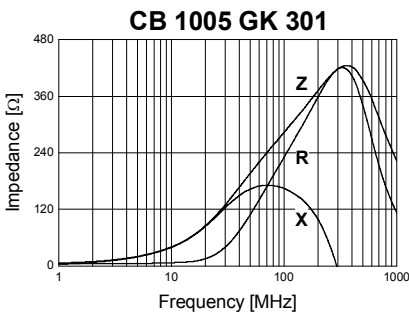
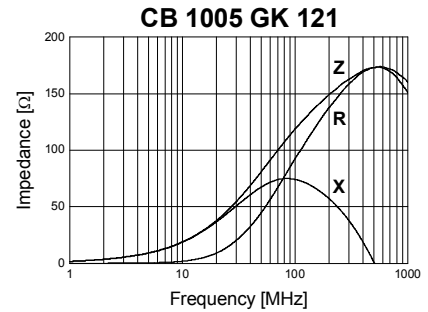
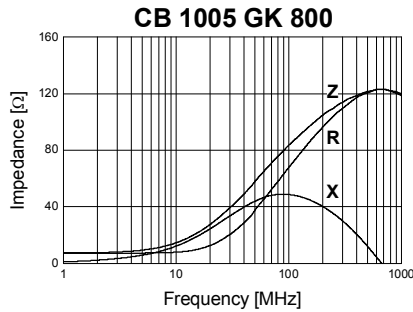
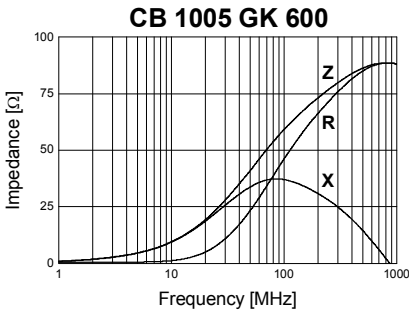
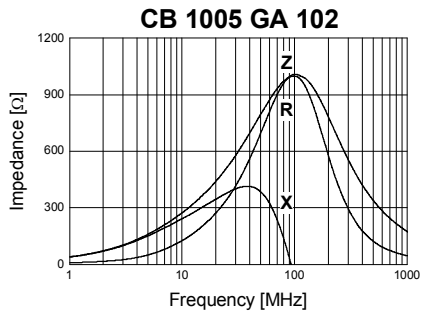
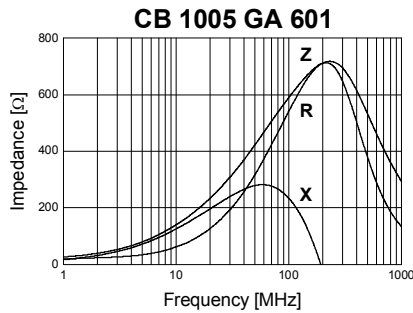
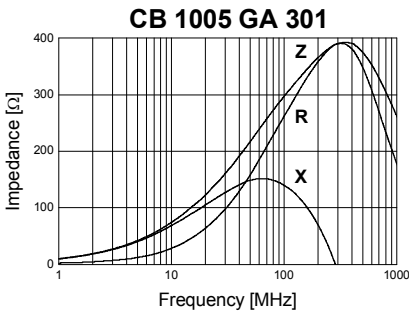
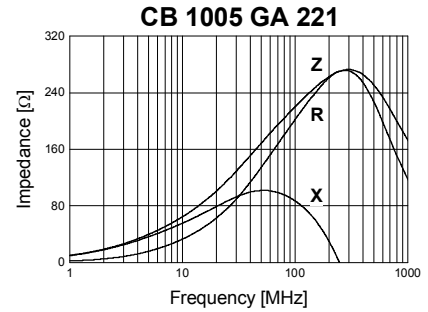
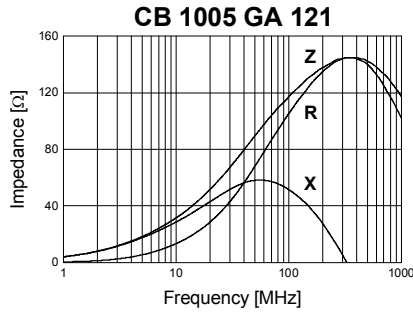
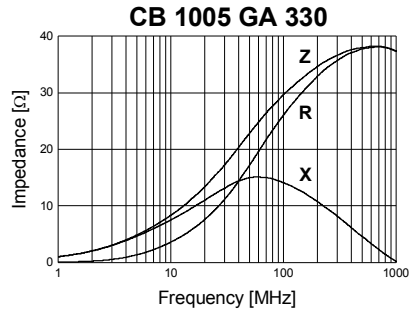
Samwha P/N	Impedance (Ω) \pm 25%	DC Resistance (Ω) max.	Rated Current (mA) max.	Test Frequency (MHz)
CB1005GM300	30	0.20	400	100
CB1005GM600	60	0.30	300	
CB1005GM121	120	0.40	300	
CB1005GV080	8	0.10	500	
CB1005GV320	32	0.25	400	
CB1005GV470	47	0.35	300	
CB1005GV600	60	0.40	300	
CB1005GV750	75	0.40	300	
CB1005GV121	120	0.55	300	
CB1005GV221	220	0.80	200	

※ Measuring Equipment

- . Z : HP4291B / E4991A

- . Rdc : HP4338B

❖ 1005 SIZE

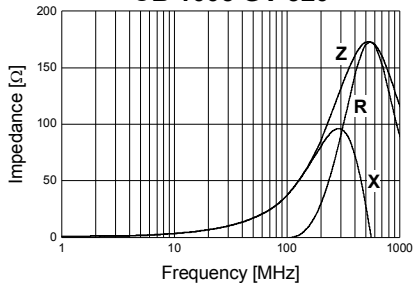


CHIP BEAD, Signal Line Series

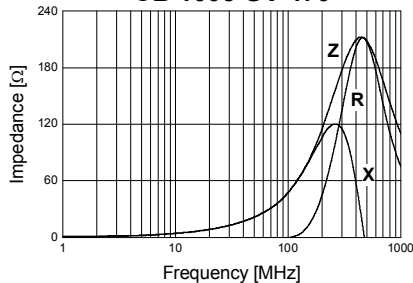
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❖ 1005 SIZE

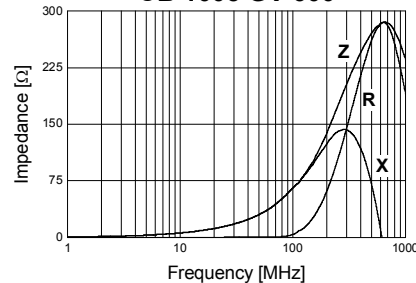
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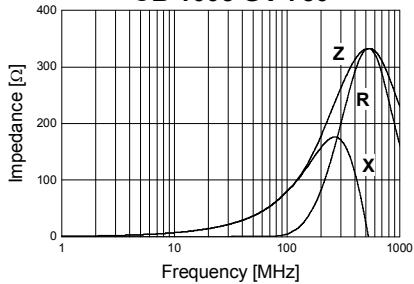
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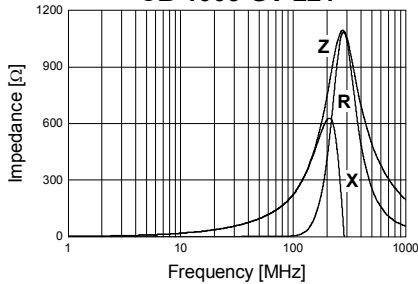
CB 1005 GV 600



CB 1005 GV 750



CB 1005 GV 221



CHIP BEAD, Signal Line Series

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❖ 1608 SIZE

Samwha P/N	Impedance (Ω) $\pm 25\%$	DC Resistance (Ω) max.	Rated Current (mA) max.	Test Frequency (MHz)
CB1608GA100	10	0.05	500	100
CB1608GA300	30	0.08	500	
CB1608GA600	60	0.15	200	
CB1608GA121	120	0.20	200	
CB1608GA221	220	0.30	200	
CB1608GA301	300	0.40	200	
CB1608GA471	470	0.50	200	
CB1608GA601	600	0.50	200	
CB1608GA102	1000	0.70	200	
CB1608GK300	30	0.08	900	
CB1608GK600	60	0.20	700	
CB1608GK121	120	0.25	600	
CB1608GK221	220	0.30	550	
CB1608GK301	300	0.35	500	
CB1608GK471	470	0.45	350	
CB1608GK601	600	0.50	350	
CB1608GK102	1000	0.70	200	
CB1608GK202	2000	1.20	150	
CB1608GK252	2500	1.50	150	
CB1608GJ300	30	0.08	900	
CB1608GJ600	60	0.12	700	
CB1608GJ121	120	0.20	500	

※ Measuring Equipment

-. Z : HP4291B / E4991A

-. Rdc : HP4338B

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❖ 1608 SIZE

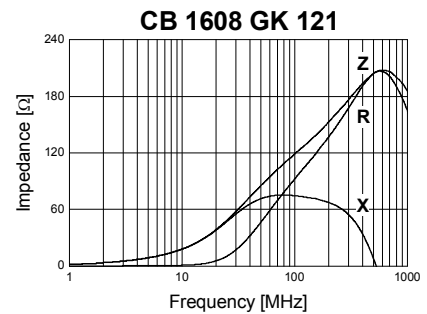
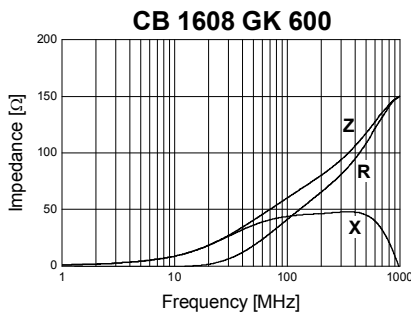
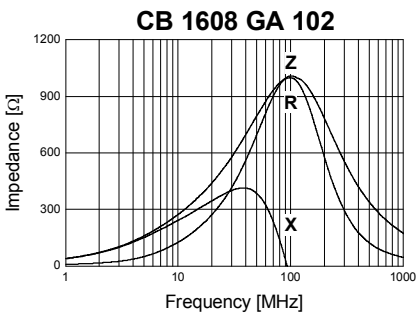
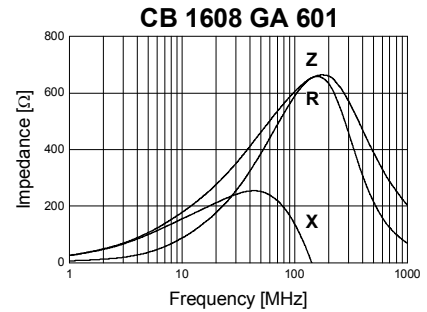
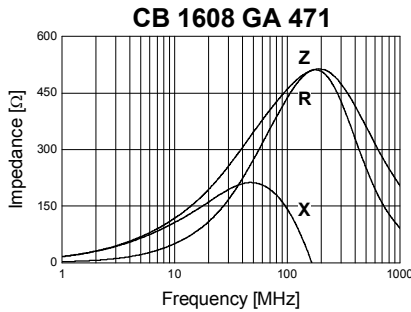
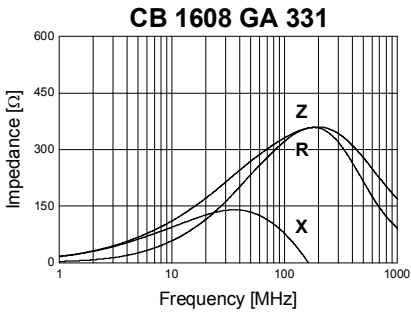
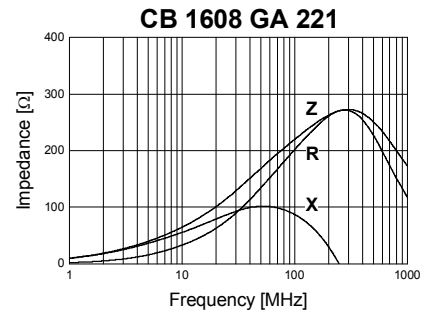
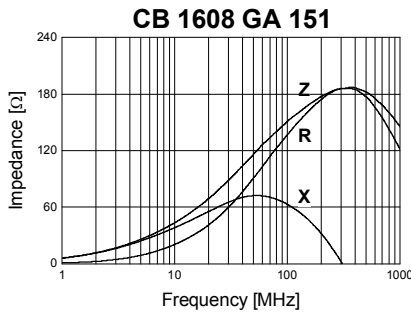
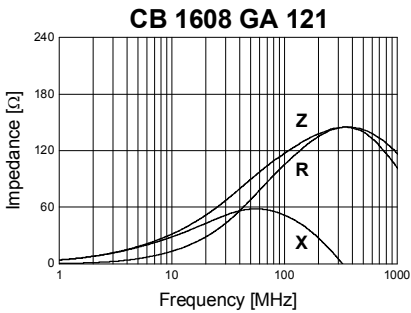
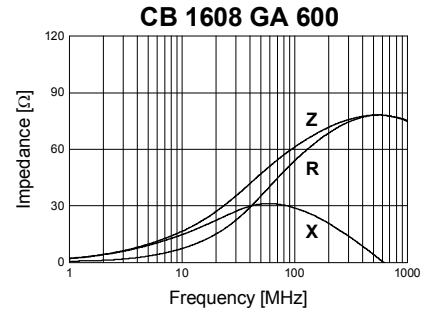
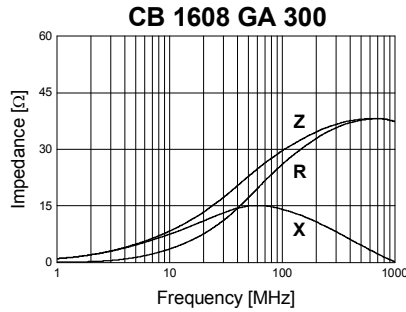
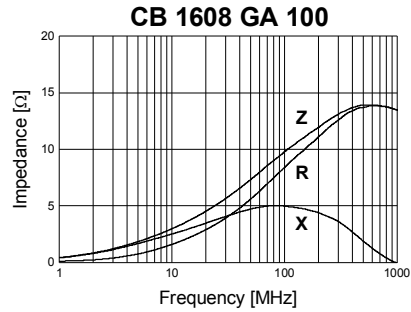
Samwha P/N	Impedance (Ω) \pm 25%	DC Resistance (Ω) max.	Rated Current (mA) max.	Test Frequency (MHz)
CB1608GM300	30	0.12	500	100
CB1608GM470	47	0.15	500	
CB1608GM121	120	0.25	400	
CB1608GM221	220	0.30	400	
CB1608GM301	300	0.40	300	
CB1608GM471	470	0.50	200	
CB1608GM601	600	0.60	200	
CB1608GM102	1000	0.80	200	
CB1608GV100	10	0.15	500	
CB1608GV300	30	0.25	500	
CB1608GV600	60	0.35	200	
CB1608GV121	120	0.50	200	
CB1608GV151	150	0.55	200	
CB1608GV221	220	0.65	200	

※ Measuring Equipment

- . Z : HP4291B / E4991A

- . Rdc : HP4338B

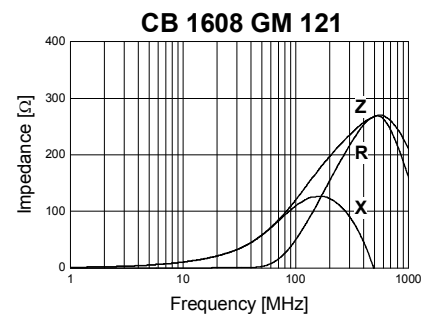
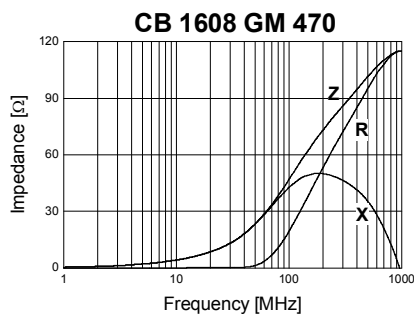
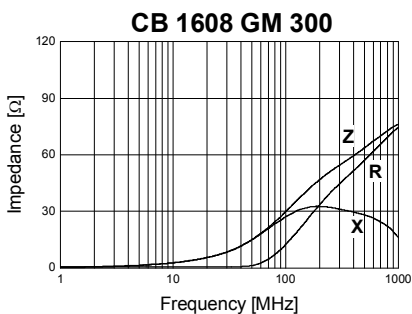
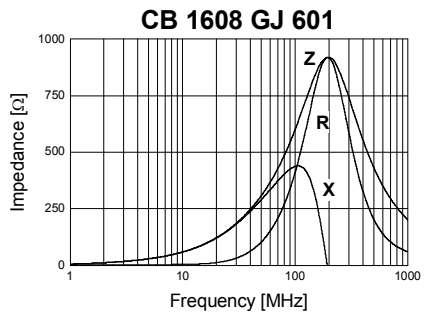
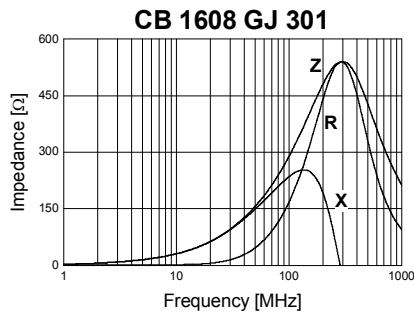
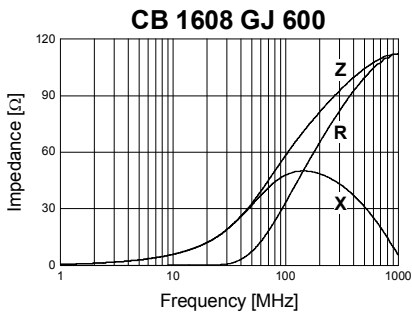
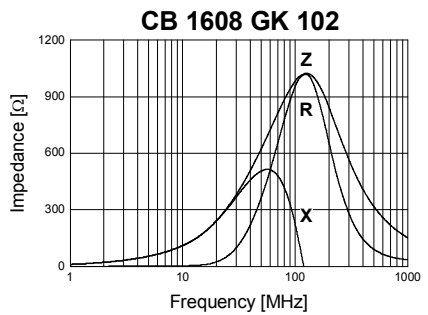
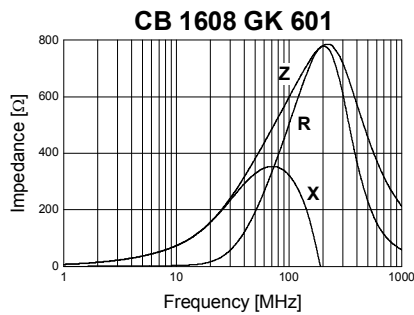
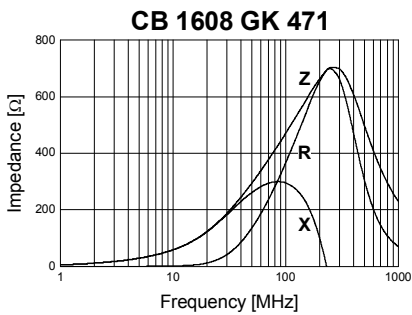
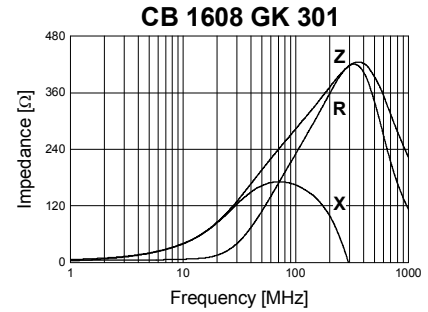
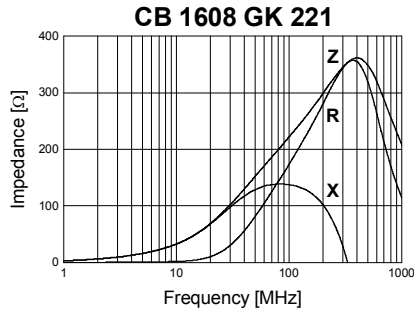
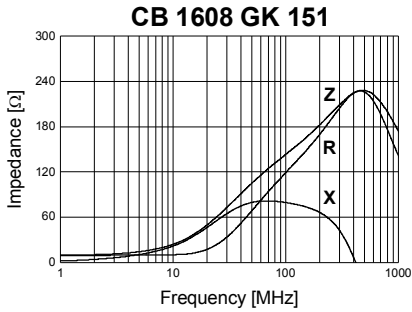
❖ 1608 SIZE



CHIP BEAD, Signal Line Series

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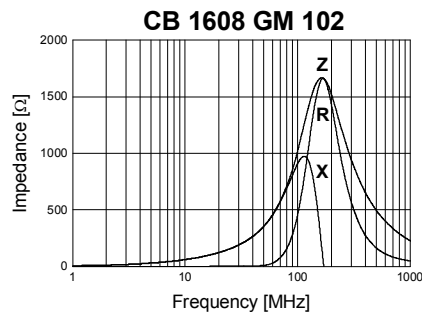
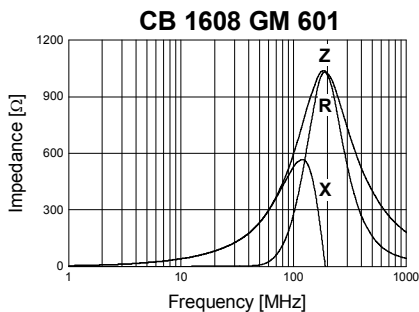
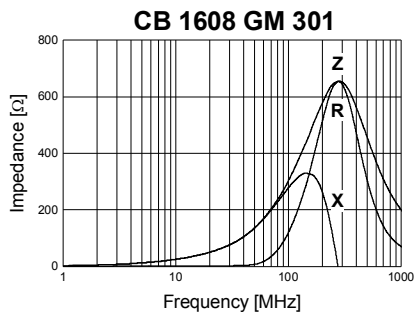
❖ 1608 SIZE



CHIP BEAD, Signal Line Series

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❖ 1608 SIZE



CHIP BEAD, Signal Line Series

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❖ 2012 SIZE

Samwha P/N	Impedance (Ω) $\pm 25\%$	DC Resistance (Ω) max.	Rated Current (mA) max.	Test Frequency (MHz)
CB2012GA100	10	0.010	500	100
CB2012GA300	30	0.025	500	
CB2012GA500	50	0.06	500	
CB2012GA600	60	0.06	500	
CB2012GA121	120	0.15	200	
CB2012GA151	150	0.15	200	
CB2012GA221	220	0.20	200	
CB2012GA301	300	0.25	200	
CB2012GA471	470	0.25	200	
CB2012GA601	600	0.30	200	
CB2012GA102	1000	0.45	200	
CB2012GA202	2000	0.60	200	40
CB2012GK150	15	0.08	500	100
CB2012GK500	50	0.06	500	
CB2012GK121	120	0.20	300	
CB2012GK151	150	0.20	300	
CB2012GK221	220	0.30	300	
CB2012GK301	300	0.30	300	
CB2012GK471	470	0.35	300	
CB2012GK601	600	0.40	300	
CB2012GK102	1000	0.45	300	
CB2012GK202	2000	0.60	300	

CHIP BEAD, Signal Line Series

※ Measuring Equipment

-. Z : HP4291B / E4991A

-. Rdc : HP4338B

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❖ **2012 SIZE**

Samwha P/N	Impedance (Ω) $\pm 25\%$	DC Resistance (Ω) max.	Rated Current (mA) max.	Test Frequency (MHz)
CB2012GJ300	30	0.10	700	100
CB2012GJ600	60	0.10	700	
CB2012GM050	5	0.03	500	
CB2012GM300	30	0.05	500	
CB2012GM600	60	0.08	300	
CB2012GM800	80	0.08	300	
CB2012GM121	120	0.10	300	
CB2012GM151	150	0.12	300	
CB2012GM221	220	0.12	300	
CB2012GM301	300	0.15	300	
CB2012GM451	450	0.25	300	
CB2012GM601	600	0.25	300	
CB2012GM102	1000	0.30	300	
CB2012GV080	8	0.05	500	
CB2012GV400	40	0.15	300	
CB2012GV121	120	0.20	300	

CHIP BEAD, Signal Line Series

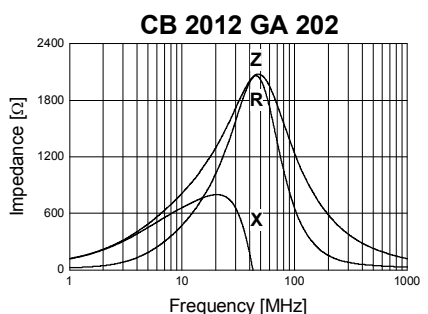
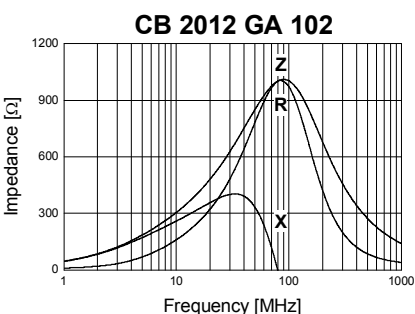
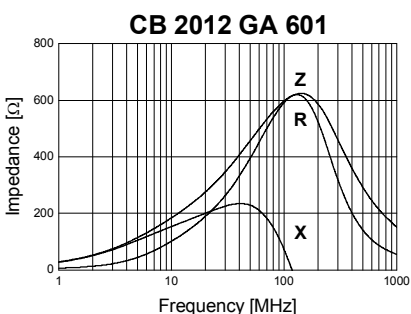
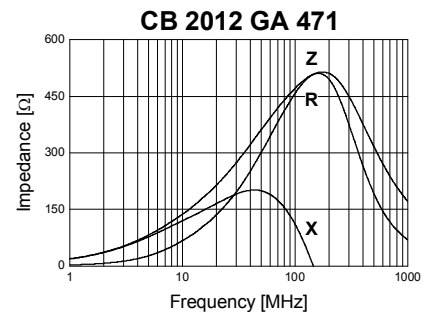
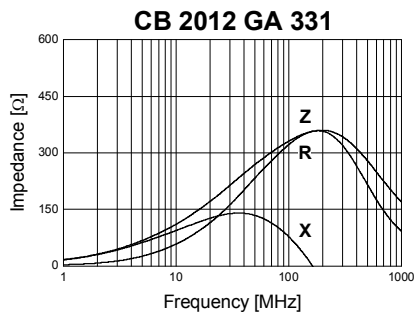
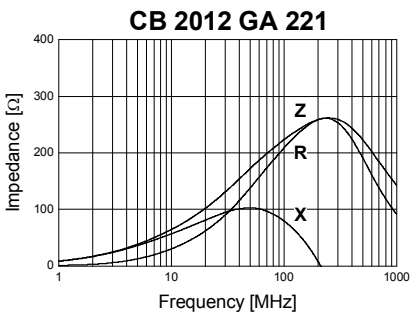
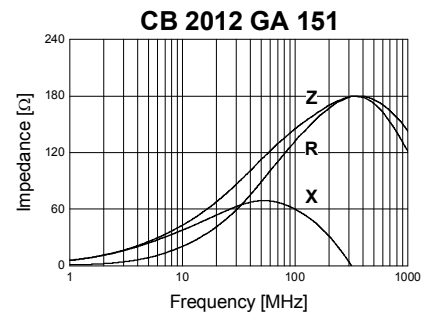
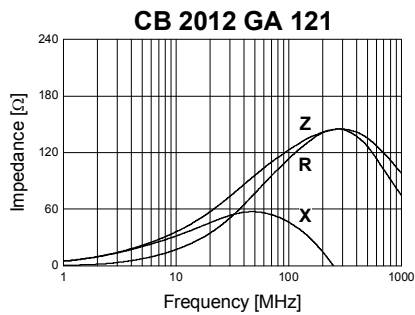
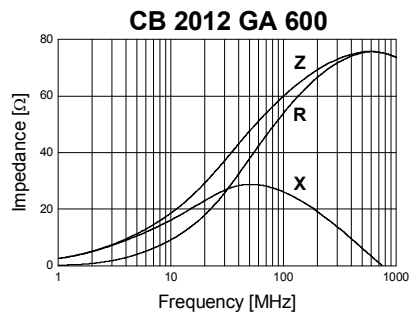
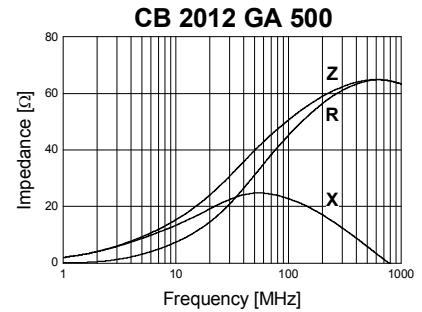
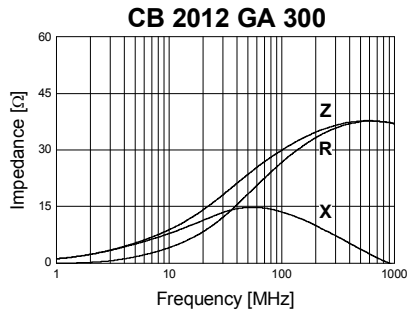
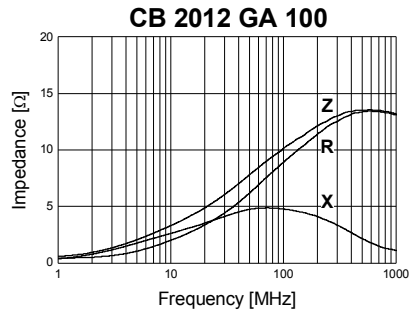
※ Measuring Equipment

-. Z : HP4291B / E4991A

-. Rdc : HP4338B

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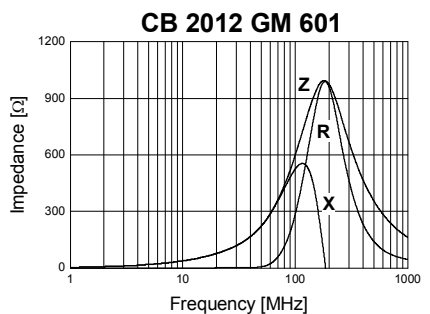
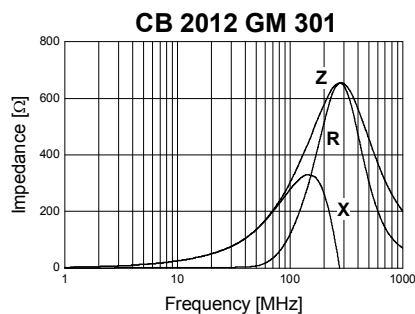
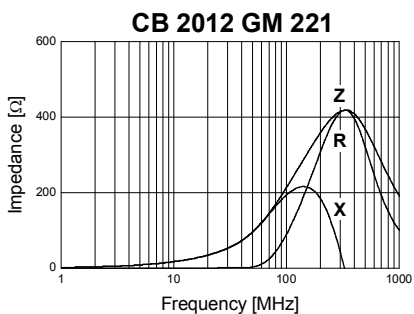
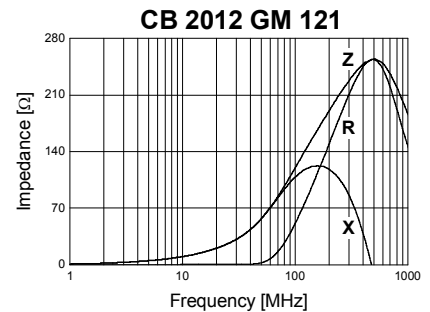
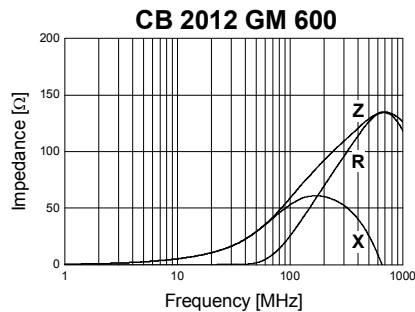
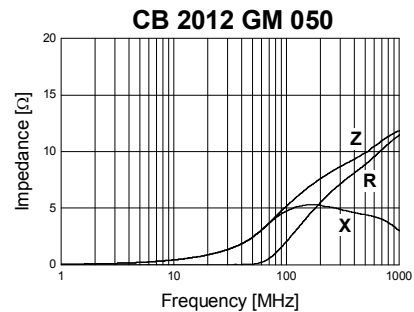
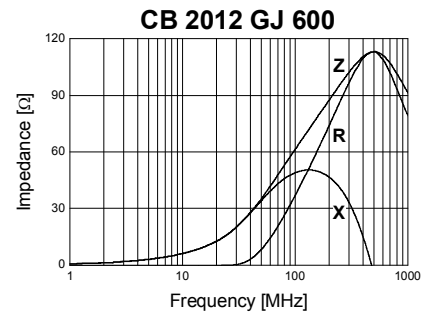
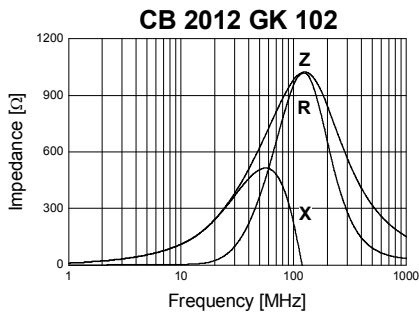
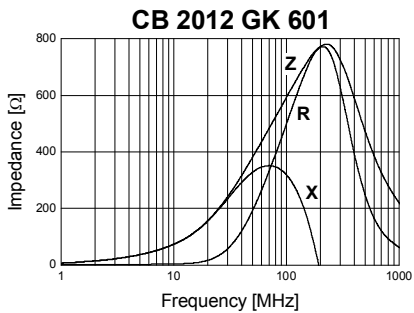
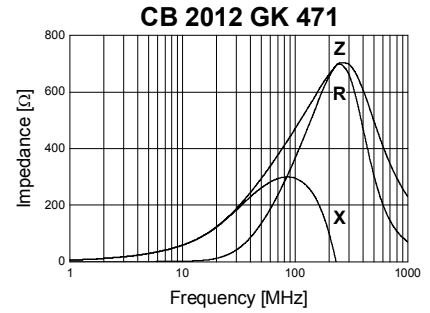
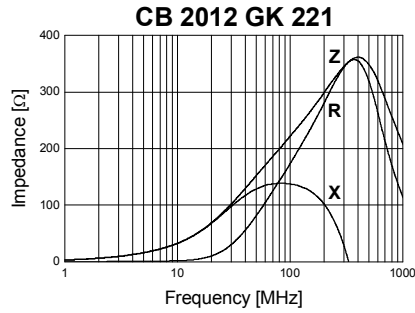
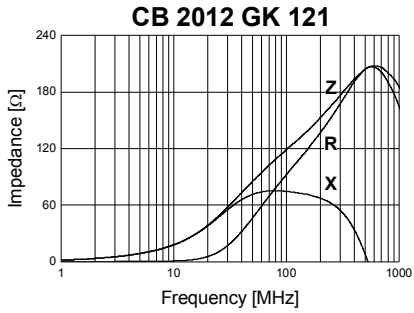
❖ 2012 SIZE



CHIP BEAD, Signal Line Series

This description in the this catalogue is subject to change without notice

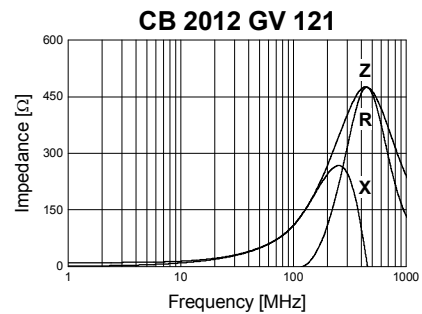
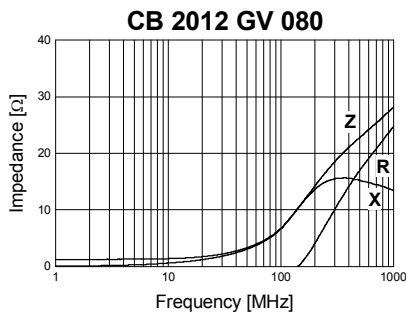
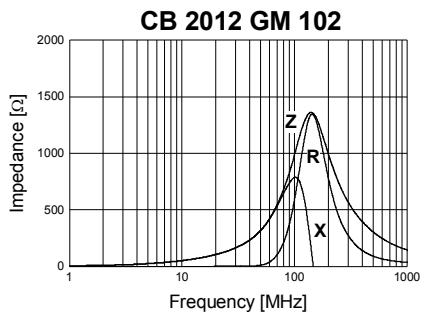
❖ 2012 SIZE



CHIP BEAD, Signal Line Series

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❖ 2012 SIZE



CHIP BEAD, Signal Line Series

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❖ 3216 SIZE

Samwha P/N	Impedance (Ω) $\pm 25\%$	DC Resistance (Ω) max.	Rated Current (mA) max.	Test Frequency (MHz)
CB3216GA350	35	0.03	600	100
CB3216GA500	50	0.03	600	
CB3216GA600	60	0.04	600	
CB3216GA700	70	0.04	600	
CB3216GA121	120	0.10	300	
CB3216GA151	150	0.12	300	
CB3216GA201	200	0.15	300	
CB3216GA301	300	0.20	300	
CB3216GA601	600	0.30	200	
CB3216GA102	1000	0.40	200	
CB3216GK121	120	0.10	300	
CB3216GK151	150	0.15	300	
CB3216GK221	220	0.20	300	
CB3216GK301	300	0.20	300	
CB3216GK471	470	0.25	200	
CB3216GK601	600	0.30	200	
CB3216GK102	1000	0.40	200	
CB3216GM121	120	0.25	200	
CB3216GM151	150	0.25	200	
CB3216GM201	200	0.30	200	
CB3216GM301	300	0.30	200	
CB3216GM601	600	0.40	200	

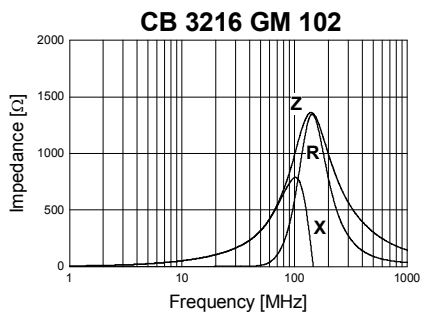
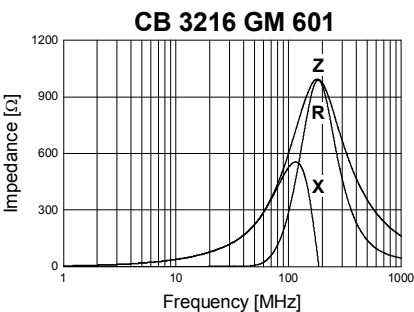
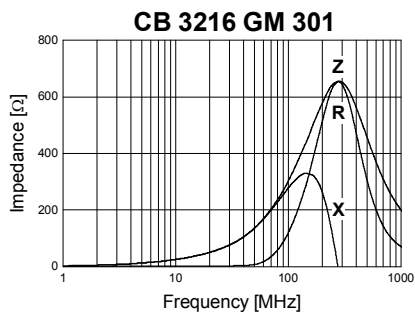
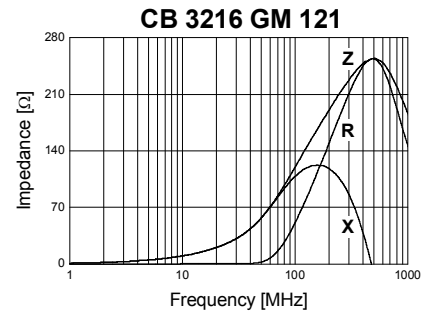
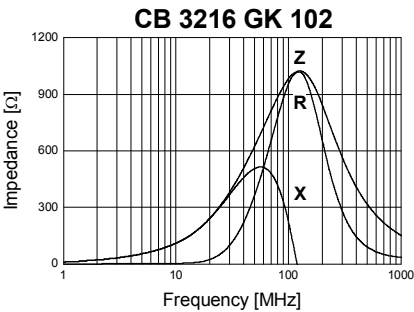
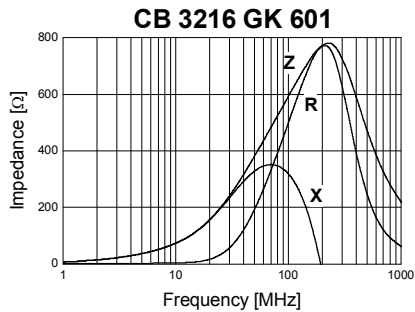
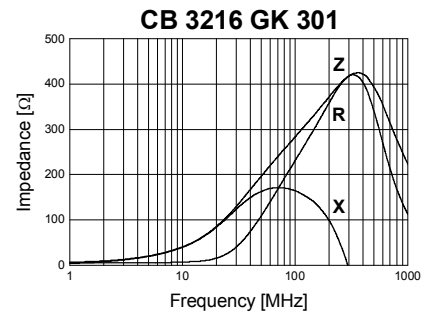
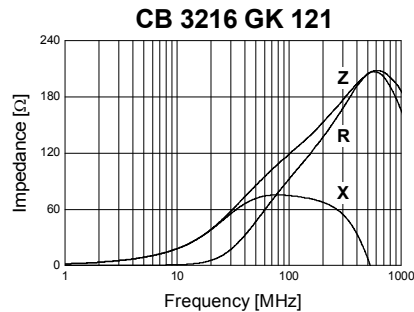
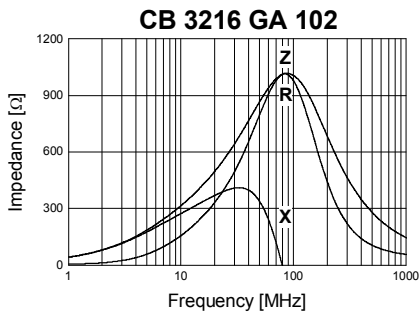
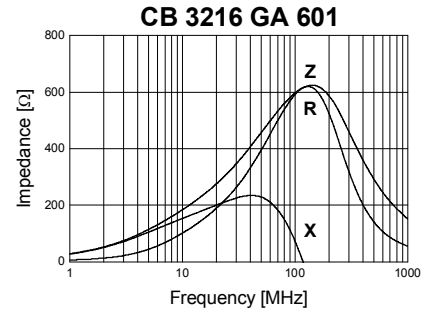
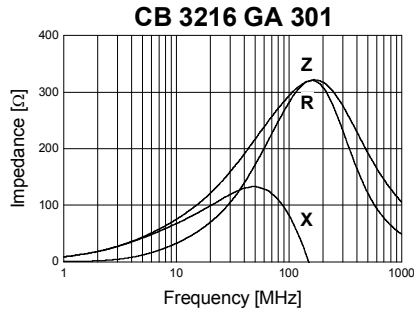
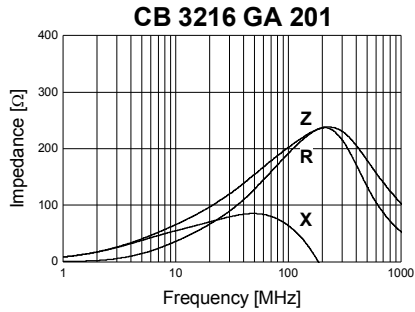
※ Measuring Equipment

-. Z : HP4291B / E4991A

-. Rdc : HP4338B

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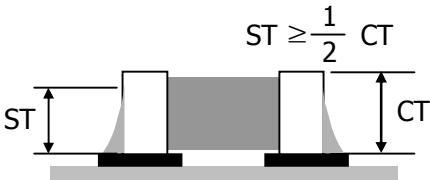
❖ 3216 SIZE



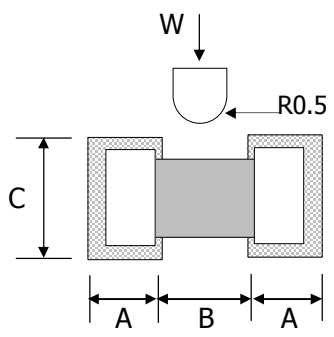
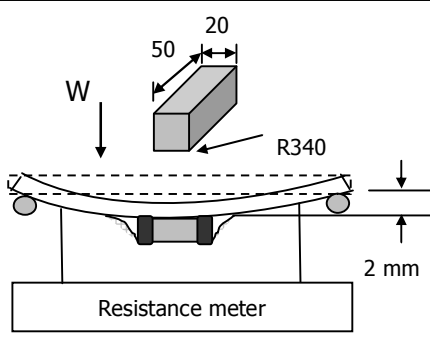
CHIP BEAD, Signal Line Series

This description in the this catalogue is subject to change without notice

Reliability & Test Condition

Item	Requirements	Test Conditions
Operating temperature range	- 55 °C ~ + 125 °C	-
Storage temperature range	40 °C max., 70% RH max.	at packing condition
Solderability	More than 90% of the terminal electrode shall be covered with new solder	Preheat temperature : 100 ~ 150 °C Preheat time : 60 sec. Solder temperature : 245 ± 5 °C Soldering time : 10 ± 1 sec.
Resistance to soldering heat	<ol style="list-style-type: none"> 1. No damage such as cracks should be caused in chip element 2. More than 75% of the terminal electrode shall be covered with new solder 3. Impedance shall not change more than ± 30 % 	Preheat temperature : 100 ~ 150 °C Preheat time : 60 sec. Solder temperature : 270 ± 10 °C Soldering time : 10 ± 0.5 sec.
Reflow soldering	<p>More than 50% of the terminal electrode shall be covered with new solder</p>  $ST \geq \frac{1}{2} CT$	Preheat temperature : 150 °C Preheat time : 60 sec. Solder temperature : 245 ± 5 °C Soldering time : 10 sec. max. (Reflow soldering profile)
High temperature resistance		Temperature : 125 ± 3 °C Time : 500 ± 12 hours Measurement at room ambient temperature after placing for 24 hours
High temperature load resistance	<ol style="list-style-type: none"> 1. No mechanical damage 2. Impedance shall not change more than ± 30 % 	Temperature : 125 ± 3 °C Applied current : rated current Time : 1000 ± 12 hours Measurement at room ambient temperature after placing for 24 hours
Humidity resistance		Temperature : 40 ± 2 °C Humidity : 90 ± 2 % RH Time : 500 ± 12 hours Measurement at room ambient temperature after placing for 24 hours

Reliability & Test Condition

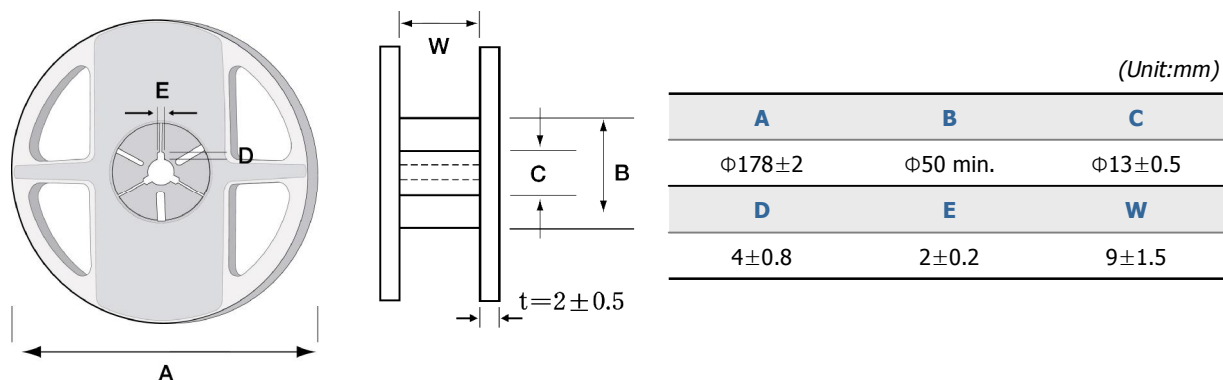
Item	Requirements	Test Conditions																																			
Humidity load resistance	1. No mechanical damage 2. Impedance shall not change more than $\pm 30\%$	Temperature : $40 \pm 2\text{ }^{\circ}\text{C}$ Humidity : $90 \pm 2\%$ RH Applied current : rated current Time : 500 ± 12 hours Measurement at room ambient temperature after placing for 24 hours																																			
Low temperature resistance		Temperature : $-55 \pm 3\text{ }^{\circ}\text{C}$ Time : 1000 ± 12 hours Measurement at room ambient temperature after placing for 24 hours																																			
Thermal shock		1. $-55 \pm 3\text{ }^{\circ}\text{C}$ for 30 minutes 2. $125 \pm 3\text{ }^{\circ}\text{C}$ for 30 minutes 3. repeat 100 cycle																																			
Vibration		Frequency : $10 \sim 55$ Hz Amplitude : 1.5 mm Direction : X, Y, Z Sweep time : 2 hours for each axis																																			
Drop		Drop 10 times on a concrete floor from a height of 100 cm																																			
Flexure strength	No mechanical damage <table border="1"> <thead> <tr> <th>ITEM</th> <th>1005</th> <th>1608</th> <th>2012</th> <th>3216</th> <th>4516</th> <th>4532</th> </tr> </thead> <tbody> <tr> <td>A (mm)</td> <td>0.7</td> <td>1.0</td> <td>1.0</td> <td>1.3</td> <td>1.5</td> <td>1.5</td> </tr> <tr> <td>B (mm)</td> <td>0.5</td> <td>0.8</td> <td>1.0</td> <td>1.5</td> <td>3.6</td> <td>3.6</td> </tr> <tr> <td>C (mm)</td> <td>0.7</td> <td>1.3</td> <td>1.3</td> <td>3.0</td> <td>3.0</td> <td>3.8</td> </tr> <tr> <td>W (kgf)</td> <td>0.7</td> <td>2.0</td> <td>4.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> </tr> </tbody> </table>	ITEM	1005	1608	2012	3216	4516	4532	A (mm)	0.7	1.0	1.0	1.3	1.5	1.5	B (mm)	0.5	0.8	1.0	1.5	3.6	3.6	C (mm)	0.7	1.3	1.3	3.0	3.0	3.8	W (kgf)	0.7	2.0	4.0	5.0	5.0	5.0	
ITEM	1005	1608	2012	3216	4516	4532																															
A (mm)	0.7	1.0	1.0	1.3	1.5	1.5																															
B (mm)	0.5	0.8	1.0	1.5	3.6	3.6																															
C (mm)	0.7	1.3	1.3	3.0	3.0	3.8																															
W (kgf)	0.7	2.0	4.0	5.0	5.0	5.0																															
Bending strength	The terminal electrode shall be neither break off nor the chip damage																																				

Packaging

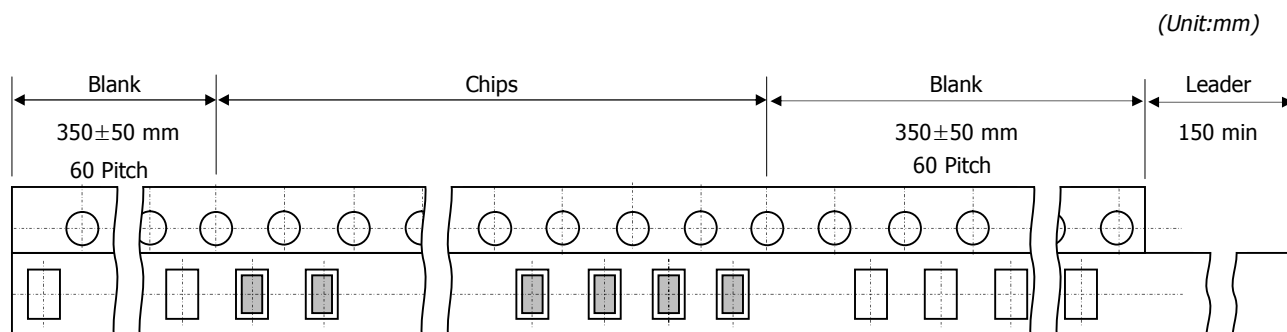
❖ Standard Quantity

Size	Q'TY(PCS)	Remarks
1005	10,000	
1608	4,000	
2012	4,000	0.85 T size
3216	3,000	
4516	2,000	
4532	1,000	

❖ Reel Dimension



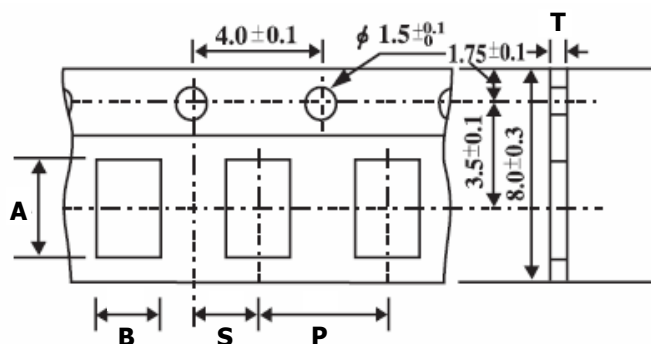
❖ Leader & Blank Portion



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Packaging

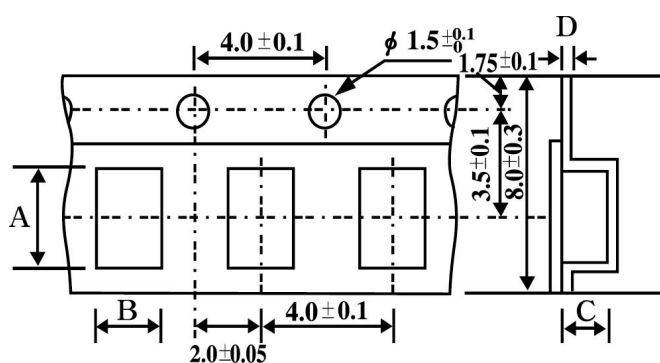
❖ Taping Dimensions (Paper tape)



(Unit:mm)

Type	A ±0.1	B ±0.1	P ±0.1	S ±0.1	T (Max.)
1005	1.15	0.65	2.0	1.0	0.8
1608	1.80	1.00	4.0	2.0	1.1
2012	2.30	1.55	4.0	2.0	1.1

❖ Taping Dimensions (Emboss tape)



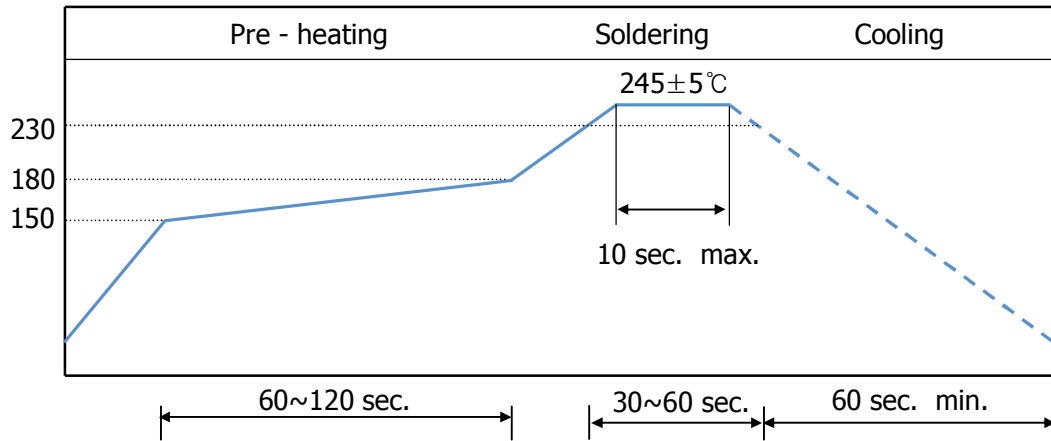
(Unit:mm)

Type	A ±0.1	B ±0.1	C ±0.1	D ±0.1
2012	2.25	1.45	1.50	0.23
3216	3.50	1.85	1.25	0.23
4516	4.90	1.90	1.35	0.30
4532	4.85	3.60	1.40	0.30

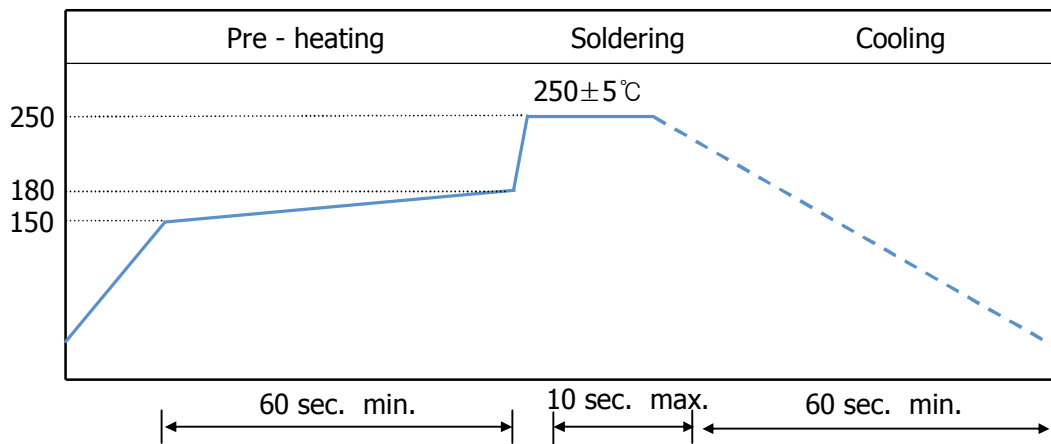
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Soldering Profile

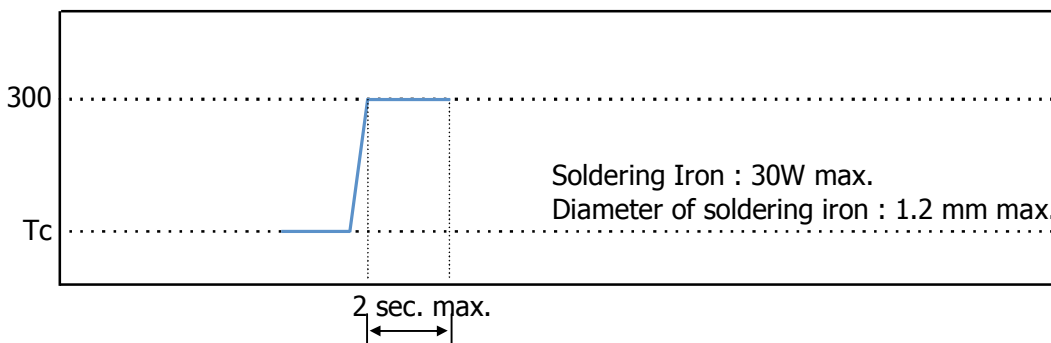
❖ Reflow Soldering



❖ Flow Soldering



❖ Manual Soldering



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CHIP BEAD, Soldering Profile